

Additionally, applicants herewith submit an amended Figure 1 which additionally shows a cyclone (3a) and a closable flap (6) sited in the circulation gas line. Applicants further herewith present new Figures 2 and 5 which show embodiments of the gas-phase fluidized-bed reactor of the invention in which a gas distributor plate (7) or flow reshapers (6b) are present in the region of transition of the reaction gas from the circulation gas line (3) into the reactor chamber (1). New Figures 3 and 4 which are also provided herewith by applicants show a closable flap (6) having uniformly distributed holes, and a gas distributor plate (7) with gas orifices which occupy more than 20% of the total surface area of the plate, respectively.

Corresponding to the revised and added drawings, applicants have amended page 5 of the application to include a brief and a detailed description of the figures. No new matter has been added.

The Examiner objected to the drawings under 37 C.F.R. §1.83(a) for failing to show elements referred to in the claims. Withdrawal of the respective objection is respectfully solicited in light of the foregoing and the attached.

The Examiner also objected to Claim 4 because of a typographical error. Applicants' amendment corrects the error and withdrawal of the respective objection is therefore respectfully solicited.

The Examiner rejected Claims 4 and 5 under 35 U.S.C. §112, ¶1, asserting that the specification failed to reasonably convey to a person of ordinary skill in the art that applicants' had possession of the invention at the time the application was filed.

With a view to the features of Claim 4 the Examiner focused in particular on a description of how flow reshapers be arranged so as to bring about substantially homogeneous introduction of the gas flow into the fluidized bed.

It is respectfully submitted that a person of ordinary skill in the art of fluidized bed reactors is well acquainted with the arrangement of flow reshapers and the manner in which to arrange such flow reshapers in order to bring about the desired homogeneous flow²). It is well settled that an application need not teach, and preferably omits, that which is well known in the art³), and the mere fact that applicants' description of the invention does not address the the manner in which to arrange such flow reshapers in order to bring about the desired homogeneous flow would therefore not reasonably be taken by a person of ordinary skill in the art as an indication that applicants were not in possession of the respective embodiment of the invention at the time the invention was made. Essentially the same applies where the flow of the gas stream is reshaped using a wide-mesh grid on which balls are fixed in such number, size and distribution as to bring about substantially homogeneous introduction of the gas flow into the fluidized bed. Favorable reconsideration of the Examiner's position and withdrawal of the respective rejection is therefore respectfully solicited.

The Examiner rejected Claims 1 to 10 under 35 U.S.C. §112, ¶2, as being indefinite. It is respectfully requested that the respective rejection be withdrawn.

2) Cf., for example, *Maurel et al.*'s Figures 1 to 6 in *EP 0 297 794* (copy attached) and *Rhee et al.*'s Figure 2 in *EP 0 173 261* (copy attached).

3) Cf. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81 (CAFC 1986); *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Co.*, 730 F.2d 1452, 1463, 221 USPQ 481, 489 (CAFC 1984).

With regard to Claim 1 the Examiner pointed to problems of proper antecedent basis and applicants' amendment obviates the respective issue. The Examiner also noted that essential structural cooperative relationships of the elements of the reactor were missing and applicants' amendment introduces the requisite remarks. Applicants amendment also establishes a flow direction so that the term "follows" which was previously used in Claim 9 and which now occurs in Claim 1 can no longer be regarded as giving rise to an indefiniteness issue under Section 112, ¶2. Claim 5 has been canceled in light of the provisions of Rule 83 because features of the reactor which were referenced in that claim don't admit of a meaningful representation in a drawing. Since Claim 5 was canceled by applicants, the question of definiteness of that claim has become moot. Applicants have amended Claim 10 to replace the expression "the *units* of the circulation gas line" by the wording --the compressor (4) and the cooling device (5) of the circulation gas line--.

In light of the foregoing and the attached, the Examiner's reasons for finding that applicants' claims were indefinite under Section 112, ¶2, are therefore no longer applicable. Favorable action is solicited.

The Examiner rejected Claims 1, 2, 4, 9 and 10 under 35 U.S.C. §102(e) as being anticipated by the teaching of *Govoni et al.* (US 6,413,477).

The teaching of *Govoni et al.* relates to a process for gas phase polymerization of one or more olefins wherein the growing polymer flows through a first reaction zone and is subsequently conveyed into a second reaction zone. The fluidized bed reactors which are employed for the process of *Govoni et al.* are, accordingly, adapted such that the material passes two reaction zones in the reactor before it is recirculated or discharged.

In contrast to the arrangement of the reactor which is employed in the process of *Govoni et al.*, applicants' reactor only comprises one reaction zone located between the region of transition and the calming zone.

A further distinction between the reactor arrangement employed in accordance with the teaching of *Govoni et al.* and the arrangement of applicants' reactor resides in the configuration of applicants' reactor chamber: according to applicants' invention the reactor chamber (1) is a vertical tube which has, from bottom to top in direction of the gas flow, a region of transition, the reaction zone, and a calming zone. The reactor arrangement employed in accordance with the teaching of *Govoni et al.* does not comprise a reactor tube which is arranged in that manner.

To constitute anticipation, all material elements of the invention as claimed must be found in one prior art source⁴). Moreover, anticipation under Section 102 can be found only if a reference shows *exactly* what is claimed⁵). The test for anticipation is accordingly one of identity: the identical invention must be shown in as complete detail as is contained in the claim⁶), including the part-to-part relationships which are set forth in the claim and which give the claim its meaning⁷). The foregoing remarks show that the reactor arrangement which is employed in accordance with teaching of *Govoni et al.* differs from the reactor arrange-

4) Cf. *In re Marshall* 577 F.2d 301, 198 USPQ 344 (CCPA 1978); *In re Kalm* 378 F.2d 959, 154 USPQ 10 (CCPA 1967)

5) Cf. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (CAFC 1985).

6) Cf. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913 (CAFC 1989).

7) Cf. *Lindemann Maschinenfabrik v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481 (CAFC 1984).

ment defined in applicants' claims. It is also apparent that the elements of the reactor which is employed in accordance with teaching of *Govoni et al.* are arranged differently from the elements of applicants' reactor and are, therefore, not in the same part-to-part relationship. The teaching of *Govoni et al.* can therefore not be considered to amount to a reference which anticipates applicants' invention within the meaning of Section 102. It is therefore respectfully requested that the rejection of Claims 1, 2, 4, 9 and 10 under Section 102(e) based on the teaching of *Govoni et al.* be withdrawn. Favorable action is solicited.

The Examiner further rejected Claims 1 to 3, 6 and 9 under 35 U.S.C. §102(e) as being anticipated by the teaching of *Jorgensen et al.* (US 6,113,862). More particularly, the Examiner summarized the teaching of *Jorgensen et al.* as showing an apparatus comprising a reactor in the form of a vertical tube, a recycle or circulation line with a compressor and a heat exchanger and, arranged in the lower section of the reactor, a grid or gas distributor plate wherein more than 20% of the surface area is open space. Applicants respectfully disagree with the Examiner's understanding of the teaching of *Jorgensen et al.* The reactor arrangement of *Jorgensen et al.* comprises a primary distribution plate in the lower part of the reactor, designated by *Jorgensen et al.* as "(2)"⁸). According to the information provided by *Jorgensen et al.*, the respective primary plate or grit obstructs more than about 75%, and preferably more than about 90% of the area which is available for flow⁹). That means that gas orifices occupy less than about 25% and preferably less than about 10% of the surface area of the primary distribution plate of the reactor arrangement of *Jorgensen et al.* Claim 4 of *Jorgensen et al.*¹⁰) which was referred to by the Examiner as support of her interpretation addresses features of a secondary fluidization grid, designated by *Jorgensen et al.* as "(3)"¹¹). The secondary fluidization grit of *Jorgensen et al.*'s reactor arrangement is not located in the region of transition in the lower section of the reactor tube¹²). Rather, the secondary grid is located between a first reaction zone, designated as "(2a)", and a second reaction zone, designated as "(3a)", of the reactor arrangement addressed by *Jorgensen et al.*¹³). In accordance with the teaching of *Jorgensen et al.*, the reactor tube comprises at least two reaction zones¹⁴).

The foregoing remarks show that the reactor arrangement which is addressed in teaching of *Jorgensen et al.* differs from the reactor arrangement defined in applicants' claims. It is also apparent that the elements of the reactor which is addressed in teaching of *Jorgensen et al.* are arranged differently from the elements of applicants' reactor and are, therefore, not in the same part-to-part relationship. The teaching of *Jorgensen et al.* can, accordingly, not be considered to amount to a reference which anticipates applicants' invention within the meaning of Section 102. It is therefore respectfully requested that the rejection of Claims 1 to 3, 6 and 9 under Section 102(e) based on the teaching of *Jorgensen et al.* be withdrawn. Favorable action is solicited.

8) Cf. col. 7, indicated line 59, in conjunction with col. 4, indicated line 20, of US 6,113,862.

9) Cf. col. 4, indicated lines 20 to 23, of US 6,113,862.

10) Cf. col. 10, indicated lines 1 to 3, of US 6,113,862.

11) Cf. col. 7, indicated line 60, in conjunction with col. 4, indicated line 24, of US 6,113,862.

12) Cf. Figure 1 of US 6,113,862.

13) Cf. col. 7, indicated line 58 to 61, in conjunction with Figure 1, and col. 9, indicated lines 23 to 32, of US 6,113,862.

14) Cf. col. 4, indicated lines 51 to 65, of US 6,113,862.

The Examiner rejected Claims 7 and 8 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Govoni et al.* (ibid.) when taken in view of the disclosure of *Lachance et al.* (US 4,720,235). The Examiner argued that it would have been obvious to incorporate a closable flap into the reactor arrangement addressed in the teaching of *Govoni et al.* because *Lachance et al.* disclose a jet flap construction for a compressor which improves the compressor stability and performance.

It is respectfully urged that a person of ordinary skill in the art would not have been guided by the teaching of *Lachance et al.* to employ a closable flap in the reactor arrangement addressed in the teaching of *Govoni et al.* in the manner in which the closable flap is arranged in accordance with applicants' invention.

Lachance et al. disclose that the jet flap is arranged in order to create a more efficient pre-swirl at a compressor inlet to enhance the stability of a turbine of an aircraft¹⁵). The respective jet flap is, accordingly, located in the region of the compressor inlet. Assuming, arguendo, that a person of ordinary skill in the art would reasonably consider the effects in a turbine of an aircraft to be comparable to the conditions within a gas-phase fluidized-bed reactor for polymerizing ethylenically unsaturated monomers, the teaching of *Lachance et al.* would at best suggest to incorporate a jet flap in the inlet region of the compressor which is sited in the circulation gas line of the reactor arrangement. However, in contrast to the arrangement which is disclosed by *Lachance et al.* in which the closable flap is in the inlet region of a compressor, the reactor arrangement of applicants' invention comprises the closable flap in the region of transition from the circulation gas line into the lower section of the reactor chamber which is, necessarily, behind the outlet of the compressor which is sited in applicants' circulation gas line. The disclosure of *Lachance et al.* contains nothing which would suggest that a jet flap which is arranged downstream of a compressor has any effect. Also, a jet flap which is arranged downstream of a compressor can clearly not serve to impact the pre-swirl at the compressor inlet so that a person of ordinary skill in the art could not reasonably expect to achieve an improvement by introducing a jet flap downstream of a compressor. The teaching of *Govoni et al.* taken in view of the disclosure of *Lachance et al.* is therefore clearly insufficient to render applicants' invention *prima facie* obvious within the meaning of Section 103(a).

To establish a *prima facie* case of obviousness three basic criteria have to be met¹⁶):

- (1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings,
 - (2) there must be a reasonable expectation of success, and
 - (3) the prior art reference or the combined references must teach or suggest all of the claim limitations.
- Additionally, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and cannot be based on applicants' disclosure¹⁷). Also, the

15) Cf. col. 1, indicated lines 13 to 15 and 40 to 44, of US 4,720,235.

16) Cf., for example, MPEP §2143.

17) Cf. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438, 1442 (CAFC 1991).

level of skill in the art cannot be relied upon to provide the suggestion to combine references¹⁸). When the particularities of applicants' invention are considered in light of the teaching of *Govoni et al.* taken in view of the disclosure of *Lachance et al.* none of those basic criteria is met:

- (1) The conditions in and requirements for turbine engines for aircraft are distinctly different from the conditions in and requirements for a gas-phase fluidized-bed reactor for polymerizing ethylenically unsaturated monomers. A person of ordinary skill in the art would therefore not have been motivated to modify a fluidized bed reactor as addressed in the teaching of *Govoni et al.* by incorporating features which are useful in the context of a compressor for turbine engines as disclosed by *Lachance et al.*
- (2) In light of the distinct differences between turbine engines for aircraft and fluidized-bed polymerization reactors there is no reasonable expectation of success. The reasonable expectation of success is particularly lacking if the jet flap of *Lachance et al.* were to be incorporated into the reactor of *Govoni et al.* downstream of the compressor as is necessary to arrive at the arrangement which is defined in applicants' Claims 7 and 8.
- (3) The teaching of *Govoni et al.* taken in view of the disclosure of *Lachance et al.* fails to teach or suggest all of the limitations of applicants' Claims 7 and 8. On the one hand, *Govoni et al.* fail to teach or suggest the particular requirements of applicants' reactor arrangement which are set forth in Claim 1 and are incorporated into Claims 7 and 8 by reference to Claim 1. On the other hand, the disclosure of *Lachance et al.* fails to suggest an arrangement in which a closable flap is sited downstream from the compressor in the region of transition from the circulation gas line into the lower section of the reactor chamber.

In light of the foregoing it is respectfully requested that the rejection of Claims 7 and 8 under Section 103(a) based on the teaching of *Govoni et al.* and the disclosure of *Lachance et al.* be withdrawn. Favorable action is solicited.

The Examiner reiterated the requirement to restrict the claims which are pending in the application to elected Claims 1 to 10, arguing that the prior art rejections raised in the Office action supported that unity of invention was lacking. However, in light of the foregoing and the attached, the Examiner's respective argument is no longer valid. Moreover, the particular combination of technical features which characterizes applicants' reactor arrangement is neither anticipated nor rendered obvious by the prior art applied by the Examiner. The technical features which characterize applicants' reactor arrangement therefore qualify as the special technical features which define the contribution which applicants' invention makes over the prior art. The respective special technical features are incorporated into Claims 11 to 15 by reference to Claim 1, so that the subject matter of Claims 11 to 15 and the subject matter of Claims 1 to 10 is in a technical relationship which involves one or more of the same or corresponding special technical features as required for unity of invention under the circumstances addressed in PCT Rule 13.2. It is therefore respectfully requested that

¹⁸) Cf. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161, 1171 (CAFC 1999).

the requirement to restrict the application be withdrawn and that Claims 11 to 15 be grouped together with Claims 1 to 10. Favorable action is solicited.

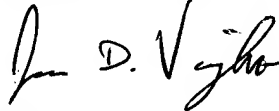
REQUEST FOR EXTENSION OF TIME:

It is respectfully requested that a *one* month extension of time be granted in this case. The respective \$120.00 fee is paid by credit card (Form PTO-2038 enclosed).

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 14.1437. Please credit any excess fees to such deposit account.

Respectfully submitted,

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Encl.: SPECIFICATION AMENDMENTS (Appendix I)
CLAIM AMENDMENTS (Appendix II)
DRAWING(S) AMENDMENTS (Appendix III)
Maurel et al. (EP 0 297 794)
Rhee et al. (EP 0 173 261)

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APPENDIX III:

DRAWING(S) AMENDMENTS:

Replacement Sheets setting forth amended Figure 1 and new Figures 2 to 5 are attached.

Figure 1 has been amended to show a cyclone (3a) and a closable flap (6) sited in the circulation gas line.

New Figure 2 shows the reactor illustrated in Figure 1 which is additionally equipped with a gas distributor plate (7).

New Figure 3 shows a closable flap (6) having uniformly distributed holes.

New Figure 4 shows a gas distributor plate (7) with gas orifices which occupy more than 20% of the total surface area of the plate.

New Figure 5 shows the reactor illustrated in Figure 1 which is additionally equipped with flow reshapers (6b) in the region of transition of the reaction gas from the circulation gas line (3) into the reactor chamber (1).